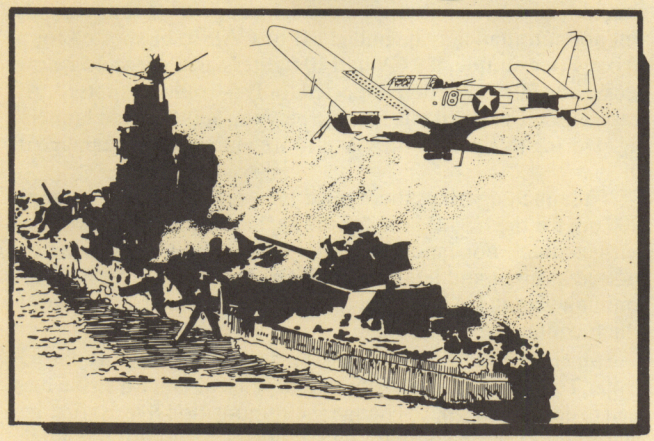
Midway Campaign



RULES FOR THE MIDWAY CAMPAIGN COMPUTER GAME

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FOR:
ATARI 400/800®,32K Memory
Apple II®, Applesoft® Basic, 16K beyond Basic
PET® 2001, 16K Memory
TRS-80® Level II, 16K Memory

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The Midway Campaign Computer Game is a computer simulation of the Battle of Midway. You take the U.S. side and the computer controls the Japanese forces.

HISTORICAL BACKGROUND

June 1942. The Pacific Theatre. The Imperial Japanese Navy has been on the offensive, victorious everywhere, for six months. Already conquered are the Philippines, southeast Asia, Indonesia, the Marianas, the Marshalls, and northern New Guinea. Midway Island is the next target.

Carriers Akagi, Kaga, Hiryu, and Soryu with their screening force will spearhead the attack. They will approach from the northwest and begin to launch strikes against the island on 4 June. The invasion force, transports loaded with troops, will arrive on 5 June. The Japanese Commander, Admiral Yammamoto, will follow to the west with a battleship task force.

The Japanese plan had one major flaw. The Japanese expected the U.S. fleet to be in Pearl Harbor. But the U.S. had broken the Japanese code. They knew the Japanese plan. Task Force 16 with carriers Enterprise and Hornet, and Task Force 17 with carrier Yorktown sailed from Pearl Harbor and took up station to the northwest of Midway. In addition, Midway airbase was reinforced.

On 3 June, an Army PBY Cataline spotted the invasion force to the west of the island. Army bombers immediately took off from Midway to attack them, but failed to inflict any serious damage.

At the same time, the Japanese carriers approached undetected to the north. At 4:45 AM on 4 June, the carriers launched the first wave against the island—108 planes. The second wave was ordered armed with torpedoes in case an enemy naval force was sighted.

The first wave struck the island. The zeros escorting the bombers shot down the U.S. CAP. The bombers hit the airbase, but did not completely knock it out. Admiral Nagumo, commander of the carrier force, was informed that a second strike would be needed against the island. The second wave was ordered below decks to rearm with bombs.

A short while later, a Japanese seaplane scout sighted the American fleet. Nagumo ordered a halt to the changeover and again ordered the planes be armed with torpedoes. He would attack the American carriers before finishing off the island.

Before the second wave could be launched, the carriers were attacked by planes from Midway airbase. Though, the carriers were not hit, they could not launch their aircraft during the attack. Aircraft from the first wave began to return. Nagumo was faced with a tough decision. He knew he must attack the American carriers, but if he launched the second wave there would be no fighter escort, and many of the planes from the first wave would crash not having enough fuel to stay inflight that long. He decided to let the first wave land and ordered the second wave below decks.

Unknown to Nagumo, another PBY Catalina had spotted the Japanese carriers and the U.S. carriers had launched their own strike. Flying in several separate groups by separate routes, many of the American planes never found their target.

The first aircraft to find the Japanese carriers were two squadrons of torpedo bombers. Without fighter cover, they were sitting ducks for the Japanese CAP. Both squadrons were totally destroyed. Shortly after, another squadron suffered a similar fate. The carriers had again escaped without damage.

Now the Japanese CAP was running low on fuel and the zeros began to land. Two squadrons of American dive bombers found the carriers and attacked. The first four planes scored hits on the Akagi. The planes refueling above and below deck began to explode. The ship began to sink. The Akagi and Soryu were next and both took multiple hits. Though they would not sink till evening, they were out of the battle.

Only the Hiryu escaped, having separated slightly from the others. She then launched a small strike against the U.S. carriers. The Japanese planes trailed the American planes all the way home to the Yorktown. The American CAP shot down most of the Japanese dive bombers, but the few that got through hit their target. Then the Japanese torpedo bombers arrived and scored several more hits. The Yorktown, heavily damaged, would sink on 7 June while trying to make it back to Pearl Harbor after being hit by a torpedo from a Japanese submarine.

Shortly after, the Hiryu was attacked by American dive bombers. Four direct hits were scored. She would burn for eleven hours before a Japanese destroyer finished her off with a torpedo. Several other Japanese ships were sunk as they retreated, but the battle was over. The invasion force turned back. The Japanese expansion across the Pacific had been slowed.

GAME MECHANICS

After an initial ENTER to initialize the RND function the game enters the interactive mode. Each entry of this mode causes the map to be displayed. Then the US player inputs Fleet Commands until he is satisfied with his forces' configuration. He then instructs the computer to proceed in the operations mode for a given amount of game time.

Fleet Commands, and the Aircraft Commands reached through the Fleet Commands, allow the US player to adjust his forces or to obtain status reports. Each command, except for the order to proceed, loops back to the request for a Fleet Command. No game time passes while executing Fleet Commands.

In the operations mode the computer loops by tactical turns until the allotted proceed time is reached or a significant event occurs, at which point it enters the interactive mode. Each tactical turn the computer decides and executes Japanese actions, moves forces, conducts search, conducts air strikes, land strikes and tests for end of game. It then loops back either to another tactical turn or the interactive mode. Tactical turns are thirty to sixty minutes of game time each.

FLEET COMMANDS—Apple II, PET, TRS-80

Fleet Commands are: 'M'-display Map, 'S'-display Status report, 'T'-change Task Force courses, 'A'-enter Aircraft

Commands. Input of any (integer) number causes the computer to proceed to the operations mode for that number of hours or until a significant event such as an attack or a spotting occurs. Input of '0' or pressing ENTER ('N' for PET) cause the computer to conduct one tactical turn and return to the interactive mode.

FLEET COMMANDS—Atari

The Atari keeps the map and status displayed on the screen continuously. Fleet Commands are: 'T'—change Task Force courses, 'A'—enter Aircraft Commands. Input of any (integer) number causes the computer to proceed to the operations mode for that number of hours or until a significant event such as an attack or a spotting occurs. Input of '0' or pressing ENTER causes the computer to conduct one tactical turn and return to the interactive mode.

THE MAP

The map consists of a 12 × 12 array of dots. The dots are 100 nautical miles (nm) apart. True North is straight up. Symbols on the map show the position of various forces. The symbols are '*'-Midway, '6'-TF-16, '7'-TF-17 and 'J'-Japanese task force. If the Japanese force is known to contain carriers (CV's) it will use a 'C' as the symbol. Japanese force positions are only displayed if the force has been spotted.

Time, date and US Task Force (TF) courses are given at the right part of the map. Below the map a contact report is given. Contact positions are given with the lower left hand dot referenced as 1 1. Thus a position of 7 3 is seven dots to the right and three up from the lower left corner dot. Occasionally a contact may be just off the left hand edge of the map. In this case it will have no visible symbol and a position of 0 4, for example, is possible. The map is output on the 'M' command and on entry to the interactive mode.

STATUS REPORT—PET, TRS-80, Apple II

A command of 'S' causes display of the status report. The report gives time, date, the aircraft status of US CV's, the spotted status of US CV's, the damage status of US CV's and a contact report.

ATARI

There are three numbers on the screen under each Task Force. These numbers are the course, horizontal (East-West) position, (the left edge of the map is 0), and vertical (North-South) position, (the bottom of the map is 0).

CHANGING COURSE

A command of 'T' results in a request for TF number and new course. 0 or 360 are North (up), 90 is East (right), 180 is South (down) and 270 is West (left). Any course in between may also be input.

AIRCRAFT COMMANDS

A command of 'A' allows input of Aircraft Commands. First a request for the CV to be affected is output. A CV is designated by the first letter of its name: E,H,Y and M for the Midway airbase. For the purpose of the game Midway is considered a non-moving CV. Once the CV is input the aircraft command is requested. Each Aircraft Command loops back to the 'Carrier?' request. Pressing ENTER ('N' for PET) to this request will return to the 'Fleet Command' request.

The Aircraft Commands are 'CA' to adjust Combat Air Patrol (CAP), 'CL' to Clear CV decks, 'A' to arm and spot a strike and 'L' to launch a strike.

CAP

CAP are fighters (VF) on Combat Air Patrol. The 'CA' command adjusts the number of fighters assigned to CAP. CAP remains designated overnight (they are presumed to land at dusk and launch at dawn). When CAP is increased, fighters are taken from those below decks. If no fighters are below decks CAP is taken from an arming strike, if available. If more CAP is requested than the CV has fighters, all available fighters on board are assigned to CAP. When CAP is decreased, the excess fighters are sent below and must be armed before they can participate in a strike.

STRIKES

A strike is a group of aircraft which is or will be sent out to attack an enemy force. A strike must first be armed and spotted on deck for launch. This is done with the 'A' command. The number of each type of aircraft to spot is requested. If more aircraft are ordered spotted than the CV has below decks, all available aircraft of that type are spotted, except that fighters will not automatically be pulled off of CAP to be spotted for a strike. For example, if a CV had 10 fighters on CAP and 5 below decks, and 20 were ordered spotted, only 5 would be spotted. At least one tactical turn must elapse between spotting and launching. During this period the CV is more vulnerable to damage if hit.

To launch a strike, there must be a spotted target in range (200 nm for the US, 235 nm for the Japanese) and the strike may neither attack nor land at night (1900-0400). A strike may be spotted at night and left spotted for as long as desired. The 'L' command results in a contact report and selection by the user of which contact to strike.

Sometimes it is desired to disarm and move below a spotted strike. To do this the 'CL' command is used. Once a strike has been ordered spotted, to change the composition it must first be cleared and then respotted. This requires no additional game time except that the respotted strike must wait at least one tactical turn before taking off (as usual).

AIRCRAFT OPERATIONS

There are three types of aircraft in the game. Fighters, or VF, shoot down other aircraft. US fighters are F4F's, Japanese-Zekes.

Dive bombers, or VB, very accurately deliver bombs by diving. US-SBD's, Japanese-Vals.

Torpedo bombers, VT, use torpedoes or bomb horizontally. They don't get near misses on ships. US-TBD's, Japanese-Kates.

For the US, each CV puts up its own strike of VB and VT with VF as escorts. For the Japanese all planes put up by the carrier group are organized into one strike. A CV may only arm one strike at a time but may have more than one airborne. The range of a strike is fixed and no suicide missions are allowed. Once a strike is launched it is completely handled by the computer. The player can only sit back and enjoy (or cringe in horror) as the strike conducts its attack.

Once a strike is airborne there is a possibility that each type of aircraft may miss the target. Upon arrival at the target, any CAP over the target will attack. The CAP choose one of two types, VB or VT, to attack. Escorting VF will defend one of the two types. Thus CAP could attack the VT while VF defend the VB, resulting in unfortunate consequences for the VT. If the escorts do defend the attacked type, they reduce but do not prevent losses. They also counter-attack the CAP and are counter-attacked in turn.

After the CAP has done its worst, task force anti-aircraft (AA) fires at each type of attacking aircraft. Finally the strike conducts an attack on shipping in the order VT then VB. If there are any floating CV's or the undestroyed Midway airbase, the attackers will be divided evenly between them. A presentation of individual results (HIT!, MISS, NEAR MISS) occurs followed by a hit summary. Damage is immediately inflicted. AA fires again as the strike leaves.

If a force without a carrier is attacked, hits and near misses are scored in victory points instead of damage.

The strike returns to the CV which launched it. When it lands it causes an automatic clearing of the decks of that CV. Thus, if there is a strike spotted on Hornet and a strike lands on Hornet, Hornet will no longer have a strike spotted. Landed aircraft are taken below but may be immediately respotted.

If the CV which launched the strike is unable to operate aircraft when the strike returns, it will attempt to divert to an operable CV. This is the only way aircraft can be transferred from CV to CV. The success of the diversion depends on the range between primary and alternate CV's.

If a task force with more than one CV is attacked, the CAP's of all CV's present are totalled to defend and then evenly distributed before damage is assessed. CAP is not affected by other air operations or nightfall. They are assumed to be kept airborne, rotating to refuel, during the day, land just before nightfall and launch before dawn. CAP only attacks one of the two types of bomber aircraft in a strike attack. The more CAP, the more aircraft will be downed.

The aircraft totals for Midway are less than the historical total. This adjusts for the obsolescence of many of the aircraft assigned to Midway. B-17's are not included as they were completely ineffective in the battle. Search for the US player is done by PBY flying boats based at Midway. These aircraft are 'invisible' in the game and may not be destroyed or attacked.

JAPANESE OPERATIONS

The Japanese have three task forces: a carrier group, a transport group and a cruiser group. The carrier group approaches from the northwest, and the other two from the west, although the possible spread of courses overlaps a bit. The subsequent explosions. Each time damage is inflicted some of the aircraft spotted or below on the damaged CV are destroyed.

The amount of damage a CV has received affects aircraft operations and victory points. Damage is divided into categories of None, Light, Heavy and SUNK or (for Midway) DESTROYED. A CV with no damage or light damage is fully operational. A CV with heavy damage is unable to operate aircraft. Immediately upon reaching the heavy damage condition, all aircraft belonging to the affected CV, including CAP, are sent below. No aircraft operations are permitted on the CV. A sunk CV loses all aircraft on board including CAP.

Each turn every damaged CV attempts to repair itself. In general somewhat less than one near miss worth of damage is repaired per turn. In addition, explosions may occur which cause further damage. In general US CV's repair damage faster and suffer fewer explosions than the Japanese. It is possible for repair parties to reduce damage to the point where a CV which had heavy damage can again operate aircraft. Sunken ships and destroyed airbases cannot be repaired.

non-carrier groups proceed directly to Midway and stop there. The carrier group heads towards Midway and will steam back and forth in strike range of same unless a US task force with a carrier is spotted. In that case, it will head directly for the spotted TF, with TF-16 preferred if both are spotted. Should all four Japanese CV's be incapable of air operations, the Japanese will panic and flee the field. All forces will head 270 at full speed. (All TF speeds, including US, are 25 knots except the transport group, which is 18 knots.)

The Japanese put up a minimum CAP of five fighters per CV. They arm half their aircraft if within 250 nm of Midway and all aircraft if a US CV is spotted. They launch strikes with the following priorities:

1. TF's with operating CV's, in the order: TF-16, TF-17, Midway.
2. TF's with inoperable floating CV's in the same order.
3. The island of Midway.

Strikes are only launched if range and daylight restrictions are met and the target is spotted.

The invasion of Midway is assumed to succeed unless the US incapacitates all four Japanese CV's.

SEARCH

Search is conducted by PBY flying boats based at Midway and float planes from Japanese cruisers. Search is independent of combat results and ranges. There is a probability of being spotted by search forces for both sides for every tactical turn in daylight. This probability is higher than normal for an hour around noon and, for the US player only, for an hour after dawn. The US player has an advantage in search.

There are three conditions of being spotted. The first is not being spotted. For US forces the second is spotted but not told they are spotted and the third is spotted and told. For Japanese forces, the second is spotted and the third is spotted and type of force known.

When spotted, forces are placed in the second condition and advanced to the third either immediately or some time later.

Midway is always considered spotted in the third condition. When a strike attacks both the launching force and the attacked force are spotted in the third condition. Once spotted, a force remains spotted until nightfall (1900). At nightfall all forces except Midway are 'unspotted'. Spottings are reported as they occur and in the contact report associated with the map and status report.

DAMAGE AND DAMAGE CONTROL

Damage is only a factor for CV's and the Midway airbase. Damage is inflicted by the hits and near misses of bomber type aircraft. Each near miss has about half the effect of a hit, although the actual amount of damage per hit is random. Having a strike spotted when hit, doubles the effect of each hit. On Midway, since it is an island airfield and not a ship, hits cause half the normal effect. Damage may also be inflicted by

END OF GAME AND VICTORY CONDITIONS

The following conditions are considered end of game:

	All Japanese CV's sunk.
or	All US CV's sunk.
or	Any Japanese TF heading 270 goes off the map to the west (left).
or	Any US TF heading 000-090-180 goes off the map to the east (right).
AND	No strike is airborne.

At the end of the game a summary of CV damage, aircraft losses, victory points from non-CV targets and the status of the Midway invasion is output, followed by an evaluation of results. In general, a sunk CV is worth 200 aircraft, a damaged one much less. Midway is worth two CV's, one for the island and one for the airbase. In general each level of victory differs by about a CV. In the actual battle the US won a strategic victory.

EXAMPLES OF PLAY

This section gives some examples that will be useful for the computer game beginner. An important thing to keep in mind is that the computer expects the player to input his commands in a very precise format and terminate them by pressing the "ENTER" (or "RETURN") key. The computer is very literal-minded and can't make guesses about what was REALLY meant! (Note that there will be some very minor differences between the versions for the different computers, but all versions are very nearly identical.)

A command that will be given often is to change the course of one of the task forces (TF-16 or TF-17) to a new heading. This is accomplished by the following sequence:

FLEET COMMAND? (Computer puts this on the screen.)
T [ENTER] (Player types.)
WHICH TASK FORCE? (Computer.)
16 [ENTER] (Player.)
NEW COURSE? (Computer.)
225 [ENTER] (Player.)
TF-16 ON COURSE 225T (Computer.)

Another useful command is arming an air strike on an aircraft carrier. Suppose the player wishes to arm a strike of 10 F4F's, 25 SBD's, and 8 TBD's on the carrier Hornet. The following sequence will accomplish this:

FLEET COMMAND? (Computer.)
A [ENTER] (Player. Enters air commands.)
CARRIER? (Computer.)
H [ENTER] (Player. Short for "Hornet".)
AIRCRAFT COMMAND? (Computer.)
A [ENTER] (Player. Short for "Arm Strike".)
NUMBER OF F4F'S, SBD's, TBD's TO SPOT? (Computer.)
10,25,8 [ENTER] (Player.)

HORNET STRIKE ARMING. (Computer.)
CARRIER? (Computer.)
[ENTER] (Player. No name returns to fleet commands.)
('N' RETURN for PET)
FLEET COMMAND? (Computer.)

While entering commands may seem difficult at first, a little experience will make entering them almost second nature. Note that the computer won't let you do anything against the rules, so don't worry about that! One trick you can use to save time when arming strikes or sending up CAP is to specify a very large number of planes (like 99) when you want to specify the maximum of any type; the computer will automatically adjust your input to the number of planes actually available.

CASSETTE LOADING INSTRUCTIONS

ATARI 400/800

Lift the cartridge door on your ATARI 400/800 computer and insert the COMPUTING LANGUAGE BASIC cartridge into the computer. Use the LEFT CARTRIDGE slot on the ATARI 800 system.

Press the POWER switch on the side of the console ON. With SIDE ONE of the cassette up, put it into your ATARI CASSETTE RECORDER and press 'REWIND' until the tape stops moving. Using the keyboard, type:

CLOAD

Then press the 'RETURN' key on the keyboard. You will hear one beep. Push 'PLAY' on the recorder and press the 'RETURN' key on the keyboard again. The recorder should start to move and the program will be loaded. By turning up the volume on your video screen you can hear the program being loaded. When the tape stops, the program has been transferred from the cassette tape to the computer. 'READY' will be displayed on the screen. Type: 'RUN' and press the 'RETURN' key to play the game. The program has been recorded on the cassette twice to insure against errors in loading. Should your video screen display the word ERROR, press the RESET button at the top righthand corner of the keyboard and repeat all of the above loading instructions.

APPLE II

The APPLE program is located on SIDE ONE after the Atari program. There are two copies of the Atari 800 program which must be skipped before the APPLE program can be loaded. By listening to the tape, you can tell the difference between the two programs. The APPLE program is easily recognized by the relatively high pitch and 'pure' quality of the calibration tone at the beginning of the program. This tone is free of the characteristic Atari 800 high pitched buzz. Find the beginning of an APPLE program and position the tape to just after the start of the calibration tone. Set up the recorder for input. On the keyboard, type:

LOAD (Don't hit 'RETURN' yet).

Press 'PLAY' on the recorder and immediately press 'RETURN' on the keyboard. The computer will start reading in your program. The computer will beep twice, once at the beginning of the program and once at the end. This program is not short and will take a few minutes to load. When you hear the second beep, type:

RUN

and press 'RETURN' to play the game.

COMMODORE PET 2001

Turn the tape over so SIDE TWO is up. Insert the tape in your recorder and rewind to the beginning of the tape. When ready, type:

LOAD

and press the 'RETURN' button on the keyboard, then the 'PLAY' button on the recorder. The tape should start moving, and start loading your program. This program is not short, and will take several minutes to load. The computer will tell you when it finds the program and starts loading. When done, the computer will print 'READY', and the tape will stop. Type:

RUN

and press 'RETURN' to play the game.

TRS-80

The TRS-80 program is located on SIDE TWO after the PET 2001 program. There are two copies of the PET program which must be skipped before the TRS-80 program can be loaded. By pulling out the EAR and MIC jacks on the recorder and listening to the tape, you can differentiate the PET program from the TRS-80 program. The PET sounds louder, yet has a lower pitch. Both PET programs last approximately a total of 8½ minutes and are followed by a portion of blank tape which is your cue to prepare to load the TRS-80 program.

Check that the volume control is set to the proper level (between 5 and 6 is normal). Press 'PLAY' on the recorder, type:

CLOAD
(For Mod III only, enter: L after CASS?, then CLOAD)

and press the 'ENTER' key on the keyboard. The recorder should start to move and your program will be loaded. This will be indicated by the flashing asterisk at the upper right corner of the screen. This program is not short, and will take several minutes to load. When the tape stops and the TRS-80 prints 'READY' on the screen, type:

RUN

and press 'ENTER' to play the game.

IF YOU CANNOT LOAD THE PROGRAM

1. Check your equipment carefully to be sure that all cables and connections are correct.
2. Re-read the section in your computer's manual that tells you how to load a tape. Try to load the tape again.
3. If you can adjust the volume on your recorder, try different settings, both higher and lower.
4. Each program is recorded twice on the tape, one recording right after the other. By listening to the tape, find the beginning of the second recording and try to load it.
5. If possible, load another program from a tape you know works on your computer. This will prove that your equipment works. Try once more to load your game.
6. The normal reason tapes will not load is tape recorder head misalignment. Your computer may be able to save and load programs on its own recorder, but be unable to read tapes made on a different recorder for this reason. Be sure your recorder heads are correctly aligned. Your local computer store or dealer can help you with this.
7. If the program still cannot be loaded, send the cassette, with a complete description of the problem (what type of computer you have, what the computer says, if anything, when you try to load the cassette or play the game, and what you did to try to get it to load.) to:

Avalon Hill Microcomputer Games
4517 Harford Road
Baltimore, Maryland 21214

Defective cassettes will be replaced.

After the program is loaded

Once you have your program loaded, it is a good idea to make a backup copy (for your own use). Follow the normal procedure for saving a basic program in your computer's manual.

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6/81
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